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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/692,390

10/22/2003

Michael Edward Barsky

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08/25/2004

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EXAMINER

YEVSNIKOV, VICTOR V

ART UNIT

PAPER NUMBER

2825

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,390

Applicant(s)

BARKSKY ET AL.

Examiner

Victor V Yevsikov

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 11-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1- 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Oka (US 6,551,906 B2) in view of Dewa (US 6,586,315 B1), in view of Yamomoto (US 2002/0178883 A1), in view of McKenna (US 6248648 B1) and in view Matsuda.

With respect to claims 1, 3, 7, 8 and 9 Oka teaches a method of parsing a wafer of crystalline material into multiple pieces, wherein:

forming an assembly of the wafer 1, a thermoplastic material 6, and a support surface 3, the thermoplastic material adhering to both the wafer and the support surface and the support surface being of a size that covers a side of the wafer (fig. 1G);

sawing through the wafer and thermoplastic material 4 in a predetermined pattern in the outline of the multiple pieces to cut the multiple pieces and the thermoplastic material underlying each of the multiple pieces out of the wafer, leaving the multiple pieces individually attached to the support surface by respective pieces of thermoplastic material (fig. 1H), and wherein

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covering a surface of the wafer with a protective layer 2 prior to the step of forming the unitary sandwich.

the protective layer comprises a photoresist 2.

Reference: figs 1G and 1H with corresponding text.

Oka teaches the features detailed previously but lack a discussion on method of removing the thermoplastic material, leaving the multiple pieces disposed on the support surface.

However, Dewa teach the method of removing the thermoplastic material by dissolving, leaving the multiple pieces disposed on the support surface (figs. 6A-6C with corresponding text).

Therefore, it would have been obvious to one of ordinary skill in the art to use the method of dissolving thermoplastic material as taught by Oka/Dewa as is routine in the art.

With respect to claim 2 Oka/Dewa teach the features detailed previously but lack a discussion on method wherein a stream of coolant fluid directing onto the wafer during the step of sawing through the wafer and thermoplastic material.

However, Yamamoto teach the method of the stream of coolant fluid directing onto the wafer during the step of sawing through the wafer and thermoplastic material (fig.3 with corresponding text).

Therefore, it would have been obvious to one of ordinary skill in the art to use the coolant fluid for cooling wafer as taught by Oka/Dewa/Yamamoto as is routine in the art.

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With respect to claim 4 and 9 Oka/Dewa/Yamamoto teach the features detailed previously but lack a discussion on method wherein the multiple pieces of the wafer possess an aspect ratio of 2 to 1 or greater.

However, McKenna teaches the method wherein the multiple pieces of the wafer possess an aspect ratio of 1.8 to 1 (col.2, lines 11-14, 38-41).

Therefore, it would have been obvious to one of ordinary skill in the art to use the method wherein the multiple pieces of the wafer possess an aspect ratio about of 2 to 1 as taught by Oka/Dewa/Yamamoto/McKenna as is routine in the art.

With respect to claims 5, 6 and 9 Oka/Dewa/Yamamoto/McKenna teach the features detailed previously but lack a discussion on method, wherein the wafer comprises a material having a hardness of 8.0 Mohs or greater and the material of the wafer comprises sapphire.

However, Matsuda teach the method of wherein the wafer comprises a material having a hardness of 8.0 Mohs or greater and the material of the wafer comprises sapphire (abstract).

Therefore, it would have been obvious to one of ordinary skill in the art to use the high hard materials for wafer as taught by Oka/Dewa/Yamamoto/McKenna/Matsuda as is routine in the art.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oka (US 6,551,906 B2) in view of Dewa (US 6,586,315 B1).

With respect to claim 10 Oka teach the method of removing individual semiconductor chips from a semiconductor wafer wherein:

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applying a protective coating 2 over the one side of the semiconductor wafer 1 containing the plurality of semiconductor chips, the protective coating comprising a photoresist;

attaching the other side of the semiconductor wafer to a carrier substrate using

thermoplastic material as an adhesive 6;

sawing the wafer along each of the straight saw lines to form a plurality of rectangular pieces;

removing the protective coating;

removing the thermoplastic material, and

individually removing the pieces from the carrier.

Reference: figs 1A-1I with corresponding text.

With respect to claim 10 Oka teaches the features detailed previously but lack a discussion on method wherein a stream of coolant fluid directing onto the wafer during the step of sawing through the wafer and thermoplastic material.

However, Yamamoto teaches the method of the stream of coolant fluid directing onto the wafer during the step of sawing through the wafer and thermoplastic material (fig.3 with corresponding text).

Therefore, it would have been obvious to one of ordinary skill in the art to use the coolant fluid for cooling wafer as taught by Oka/Yamamoto as is routine in the art.

Claims objection

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Claims 11-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor Yevsikov whose telephone number is (571) 272-1910. The examiner can normally be reached on Monday –Thursdays 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, examiner's supervisor, Matthew S. Smith, can be reached on (571) 272-1907. The fax phone numbers for the organization where this application or processing is assigned is (703) 873-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

V. Yevsikov

Victor Yevsikov
Examiner
Art Unit 2825

August 11, 2004

C. Everhart
CARIDAD EVERHART
PRIMARY EXAMINER